

**Control of Air Emissions from
Superfund Air Strippers at Superfund Groundwater Sites**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON D C 20460

JUN 15 1989

OSWER Directive 9355.0-28

MEMORANDUM

SUBJECT: Control of Air Emissions From Superfund Air Strippers at Superfund Groundwater Sites

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TO: Addressees

PURPOSE

This memorandum establishes guidance on the control of air emissions from air strippers used at Superfund sites for groundwater treatment and establishes procedures for implementation. Under this guidance, Regions should continue to make air emission control decisions on a case-by-case basis using the nine remedy selection criteria and the remedy selection process set forth in the proposed National Contingency Plan (NCP). As described below, however, the evaluation and weighing of the criteria in a "to be considered" (TBC) context will differ according to the air quality status of the site's location.

BACKGROUND

Approximately 35% of the Records of Decision (RODs) signed to date have involved sites which use a pump and treat technique to either partially or fully remediate groundwater contamination. Close to 45% of these pump and treat sites have selected air stripping. For the foreseeable future, OERR expects to use air stripping at about the same rate. This treatment technique relies on volatilization to remove volatile organic compounds (VOCs) from the groundwater, i.e. it transfers the contaminants from the liquid to vapor phase. One known side effect of air stripping is the emission of VOCs, many of which

are toxic, to the ambient air. The Superfund Program uses control devices such as vapor phase carbon adsorption and incineration to control these emissions.

In response to a request from Regional Air Division Directors for a policy to guide the selection of controls for air strippers, OERR and OAQPS conducted a joint study. The results showed that historically close to half of the Superfund air stripper sites had adopted controls during remedy selection. Another 25 percent deferred the decision to the remedial design phase. At sites with RODs signed after the enactment of the Superfund Amendments and Reauthorization Act, approximately two-thirds of the air strippers are controlled. At these sites, control decisions were based on an analysis of the cleanup standards established in Section 121 of CERCLA and the other statutory considerations which together comprise the nine remedy selection criteria: overall protection of human health and the environment; compliance with Applicable or Relevant and Appropriate Requirements (ARARs); long-term effectiveness/permanence; reduction of mobility, toxicity or volume (MTV); short-term effectiveness; implementability; cost; State acceptance; and community acceptance. Control decisions to date have been driven largely by protectiveness and State ARARs for both air toxics control and VOC control for ozone reduction. Other criteria such as MTV, short-term effectiveness, cost, and community acceptance, have also influenced the inclusion of controls.

Despite the trend towards increased control of air emissions from Superfund air strippers, the Agency remains concerned with the control of these air emissions. This concern underlies the vigorous efforts by EPA, States, localities, and industry across the country to control air toxics and reduce VOCs in ozone nonattainment areas. The adoption of this policy responds to these concerns, reflects an overall Agency concern with preventing the cross-media transfer of pollutants, and recognizes that the number of Federal, State, and local ARARs for both VOCs and air toxics appears to be rapidly increasing.

The following policy has been adopted to guide Regional decisionmakers on the use of controls for air emissions from Superfund air strippers, and other vented Superfund sources of VOCs. This policy is grounded in the remedy selection process and distinguishes between sites located in attainment and nonattainment areas.

STATEMENT OF POLICY

For sites located in areas that are attaining the National Ambient Air Quality Standards for ozone, Regions should continue applying controls based on existing Agency policy. In most cases, this will mean the adoption of controls largely in response to State ARARs, risk management (i.e., protective-ness) guidelines, and other requirements of CERCLA Section 121.

In ozone nonattainment areas, however, the adoption of controls is more likely to be indicated even if they are not mandated by current Federal or State laws and regulations or indicated by a cancer risk analysis. Aside from cancer risk from air toxics, VOC emissions contribute to non-cancer health risks in nonattainment areas because most are precursors to the formation of ozone. Consideration of these non-cancer risks when applying the remedy selection criteria generally will show that in nonattainment areas Superfund air strippers, except those with the lowest emissions rates as indicated below, generally merit controls. In determining the need for air stripper controls at a particular Superfund site in a nonattainment area, the Regions should be guided by the emissions limit goals in the document entitled, "Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations," issued in May 1988 by the Office of Air Quality Planning and Standards (OAQPS) to aid States in revising their State Implementation Plans (SIPs) to incorporate post-1987 ozone attainment strategies. The OAQPS guidance indicates that the sources most in need of controls are those with an actual emissions rate in excess of 3 pounds per hour (lb/hr) or 15 lb/day or a potential (i.e., calculated) rate of 10 tons per year (TPY) of total VOCs. The calculated rate assumes 24-hour operation, 365 days per year. Regions should note that control levels are applied on a facility basis. For the purposes of this guidance, facility is defined as a contiguous piece of property under common ownership.

This guidance applies to air strippers at Superfund sites. In establishing the policy, however, the potential for applicability to other VOC sources is recognized. Generally, the guidelines described for air strippers are suitable for VOC air emissions from other vented extraction techniques (e.g., soil vapor extraction) but not from area sources (e.g., soil excavation).

This guidance applies to future remedial decisions at Superfund sites. The policy is not explicitly designed for

actions taken by the removal program in the case of emergency or time critical removal actions. However, where time and other response circumstances permit, such as for non-time critical actions, adherence to this policy is expected.

The control levels referred to above serve as guidelines only if ARARs do not exist or are less stringent than presented here. They are not intended to preclude or replace State proposals for more stringent levels of control in pursuit of Clean Air Act goals as part of SIP revisions in nonattainment areas.

IMPLEMENTATION

This guidance seeks to incorporate air quality concerns into the Superfund remedy selection process. In particular, the use of controls for Superfund air strippers in nonattainment areas demonstrates the Agency's commitment to reducing VOCs and thus progressing toward attainment of the ozone standard. Additionally, the guidance is consistent with both the current NCP and proposed revisions. Where ARARs do not exist, EPA may consider TBCs in setting target cleanup levels. This guidance constitutes a TBC.

The Remedial Investigation/Feasibility Study (RI/FS) should generate the data needed to support control decisions for both attainment and nonattainment areas. At a minimum, the five major types of information needed are:

- Estimated cumulative uncontrolled air emissions rate from all air strippers at the site
- Consideration of health risks from the execution of the remedy as well as from the uncontrolled site
- Control alternatives and their costs
- Ozone attainment status
- Air ARARs

For purposes of this guidance "nonattainment area" means any county included in a formal post-1987 ozone SIP deficiency notification (SIP call) or any other county where the ozone National Ambient Air Quality Standard was exceeded during the previous three-year period. EPA's initial SIP calls were issued pursuant to Section 110(a)(2)(H) of the Clean Air Act and were described in the September 7, 1988 Federal Register.

The RI/FS scoping phase and work plan development should describe the specific data to be generated and the methods for doing so. Remedial Project Managers should consult with the designated Air Superfund Coordinator for technical assistance. Additional assistance is available from National Technical Guidance Manuals developed jointly by the Air and Superfund program offices for estimating air emissions and conducting air pathway analyses. The ROD should summarize this information as appropriate and clearly document the basis for the air emissions control decision.

Addressees:

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